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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,195

07/08/2003

Yuzo Hirayama

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EXAMINER

MOON, SEOKYUN

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/614,195	Applicant(s) HIRAYAMA ET AL.	
	Examiner SEOKYUN MOON	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-11,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The Applicants' arguments with respect to the newly amended independent claims 1 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-7, 9-11, and 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (JP Pub. 2002-072135, herein after, "*Kobayashi*") in view of Yuji (JP Pub. 08-101367) and Applicants' Admitted Prior Art (herein after, "*AAPA*").

As to **claim 1**, Kobayashi teaches a 3D image reproduction apparatus [abstract lines 1-2] comprising:

a display ("*11*") [drawing 2 and par. (0027)] including a screen on which a plurality of pixels (the display elements included on the "*screen 14*") are arranged to display synthesis parallax images in units of arrayed sub regions, and parallax information is assigned to each of the pixels in units of horizontally arranged pixels [drawing 2]; and

an optical system ("*slit array*", "*pinhole array*", or "*micro-lens array 12*") [drawing 2 and par. (0027)] arranged in front of the screen of the display, forming a 3D image by an integral

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photography system [par. (0030)] or a beam reproduction system from synthesis parallax images displayed on the screen in units of arrayed sub regions [par. (0029)], the optical system including a pinhole array ("*pinhole array 12*") [drawing 2 and par. (0027)] or a microlens array in which pinholes or microlenses are arranged corresponding to the arrayed sub regions.

Kobayashi does not expressly teach each of the pixels including three sub pixels that differ in color.

However, Examiner takes official notice that it is well known in the art to use sub pixels having different colors to create a color image, instead of using pixels having different colors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify each of the pixels of the display of Kobayashi to include three sub pixels that differ in color, in order to reduce the size of a display element capable of displaying any color, and thus to improve the resolution of the display (i.e. using three sub pixels to create a color instead of using three pixels).

Kobayashi as modified above does not expressly teach the sub pixels being laid out so that the adjacent sub pixels differ in color.

However, Yuji teaches an idea of arranging sub pixels on a screen of a 3D image reproduction apparatus [abstract], wherein adjacent sub pixels differ in color [drawings 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the sub pixel arrangement of the screen of Kobayashi as modified above, with the sub pixel arrangement of the screen of Yuji, so that adjacent sub pixels differ in color, in order to provide uniform color distribution on the images to be displayed, and thus to prevent image degradation.

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Kobayashi as modified by Yuji does not expressly teach the parallax information having a number of parallaxes that is not equal to whole-number multiples of the three colors of sub pixels.

However, AAPA teaches the concept of providing parallax information in a 3D image reproduction apparatus, wherein the parallax information has a number of parallaxes (“10”) [pg 4 lines 24-26] that is not equal to whole-number multiples of three colors of sub pixels [pg 4].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the 3D image reproduction apparatus of Kobayashi as modified by Yuji to have parallax information that is not equal to whole-number multiples of the three colors of the sub-pixels, as taught by AAPA, in order to allow the device user to view a plurality of different images at one viewing point on the apparatus based on the angle that the user views the apparatus and thus to provide more realistic 3D image.

As to **claim 2**, Kobayashi as modified by Yuji teaches the synthesis parallax images [Kobayashi: pars. (0029) and (0030)] comprising images ray-traced in units of the sub pixels (Kobayashi: the device-user of the display of Kobayashi observes a three-dimensional image by tracing light rays backward from a viewing position to the light source).

As to **claim 3**, Kobayashi as modified by Yuji teaches the synthesis parallax images comprising images synthesized from a plurality of parallax images in units of the sub pixels [Kobayashi: pars. (0029) and (0030) and drawing 2].

As to **claim 4**, Kobayashi as modified by Yuji and AAPA teaches that horizontally adjacent or vertically adjacent sub pixels correspond to different parallaxes [AAPA: pg 4 lines 24-25].

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As to **claim 5**, Kobayashi as modified by Yuji and AAPA teaches that the number of parallaxes is a number of different horizontal or vertical parallaxes assigned to sub pixels in a sub region [AAPA: pg 4 lines 24-25].

As to **claim 6**, Kobayashi as modified by Yuji and AAPA teaches that horizontally adjacent or vertically adjacent sub pixels correspond to different parallaxes [AAPA: pg 4 lines 24-25].

As to **claim 7**, Kobayashi as modified by Yuji and AAPA teaches that the number of parallaxes is a number of different horizontal or vertical parallaxes assigned to sub pixels in a sub region [AAPA: pg 4 lines 24-25].

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claims 1 and 5 except for the sub pixels having respectively rectangles and extending in a substantially vertical direction of the screen.

Kobayashi as modified by Yuji teaches the sub pixels having rectangles and extending in a substantially vertical direction of the screen [Yuji: drawing 2].

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.

As to **claim 17**, Kobayashi as modified by Yuji teaches sub pixels of the same color being laid out in a diagonal pattern [Yuji: drawing 2].

As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 17.

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Conclusion

4. The Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 572-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

February 26, 2010
/Seokyun Moon/
Examiner, Art Unit 2629

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629